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DETAILED ACTION

This action is **non-FINAL**.

Status of Claims

Claims 1-4, 6-9 are original and depend directly or indirectly from claim 1. Claims 10-16 stand withdrawn.

Response to Applicants' Arguments/Amendments

In view of Applicants' argument in the appeal brief received 3/7/2011, Examiner withdraws the 103(a) rejection in view of US-5,929,194 with respect to the specie.

New grounds of rejection are found herein, and therefore this action is non-final.

Claim Objections

Claims 4, 6-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections – 35 USC § 112/First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 3 recites the limitation, "halogenated derivatives...thereof" in reference to the instantly claimed compounds and their "derivatives." Applicant has not described the claimed genus of "derivatives" in a manner that would indicate they were in possession of the full scope of this genus, or even to describe what this genus is comprised of.

Regarding the requirement for adequate written description of chemical entities, Applicant's attention is directed to the MPEP §2163. In particular, *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1568 (Fed. Cir. 1997), cert. denied, 523 U.S. 1089, 118 S. Ct. 1548 (1998), holds that an adequate written description requires a precise definition, such as by structure, formula, chemical name, or physical properties, "not a mere wish or plain for obtaining the claimed chemical invention." *Eli Lilly*, 119 F.3d at 1566. The Federal Circuit has adopted the standard set forth in the Patent and Trademark Office ("PTO") Guidelines for Examination of Patent Applications under the 35 U.S.C. 112.1 "Written Description" Requirement ("Guidelines"), 66 Fed. Reg. 1099 (Jan. 5, 2001), which state that the written description requirement can be met by "showing that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics," including, *inter alia*, "functional characteristics when coupled with a known or disclosed correlation between function and structure..." *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 296 F.3d 316, 1324-25 (Fed. Cir. 2002) (quoting Guidelines, 66 Fed. Reg. at 1106 (emphasis added)). Moreover, although *Eli Lilly* and

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Enzo were decided within the factual context of DNA sequences, this does not preclude extending the reasoning of those cases to chemical structures in general. *Univ. of Rochester v. G.D. Searle & Co.*, 249 Supp. 2d 216, 225 (W.D.N.Y. 2003).

In the instant case, the claims are drawn to compounds of formula (I) as recited with an X group containing halogenated derivatives thereof. The claimed "derivatives...thereof" encompass any compound that contains the identical core as the instantly claimed compound, with a differing of substituents quoted for the identical purpose. Applicants describe no "halogenated derivatives thereof" other than mentioning in the specification:

25 synthetic techniques and general knowledge in the art. If appearing herein, the term "comprising" and derivatives thereof is not intended to exclude the presence of any additional component, step,

No derivatives are described adequately enough to allow one skilled in the art to ascertain that Applicant is in possession of the entire scope of the claimed genus. Applicants have not described this genus in a manner that would allow one skilled in the art to immediately envisage the compounds contemplated for use. As such, the claims lack adequate written description for the myriad of compounds embraced by the claimed "halogenated derivatives thereof."

The description requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See *In re Wilder*, 736, F.2d 1516, 1521, 222 USPQ 369, 372-73 (Fed. Cir. 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate.") Accordingly, it is deemed that the specification fails to provide adequate written description for the genus of the claims and does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the entire scope of the claimed invention.

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Claim Rejections – 35 USC § 112/Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding these claims, these claims are indefinite specifically because of the definition of variable "X". Specifically, examination guidelines on 35 U.S.C. 112-2nd paragraph have been provided for when Markush language is used in the Federal Register, Vol. 76, No. 27, dated February 9, 2011:

For example, a Markush group that encompasses a massive number of distinct alternative species may be indefinite under § 112, ¶2 if one skilled in the art cannot determine the metes and bounds of the claim due to an inability to envision all of the members of the Markush group. In such a circumstance, an examiner may reject the claim for indefiniteness under § 112, ¶2.

(see p. 7166).

Further, a Markush group is determined to contain an "improper Markush grouping" if all species within the Markush group do not share a single structural similarity, with a "single structural similarity" meaning that the compounds belong to the same recognized physical or chemical class or to the same art-recognized class (p. 7166, middle column). In the present case, the improper Markush grouping is in the definition of X. Firstly, X defines the members of the

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group based only being either an inert or a crosslinkable group. This does not give any particular limitation as to groups may be present. When consulting the specification to understand the meaning of a crosslinkable group, thus reading the claims in light of the specification, one finds the following (page 4 of the instant specification):

15 "Crosslinkable" means a functional group that is capable of being irreversibly cured or polymerized, thereby forming a material that cannot be reshaped or refloated. Crosslinking may be assisted by heat or by UV, microwave, x-ray, or e-beam irradiation. The term is often used interchangeably with "thermosettable" when the crosslinking is done thermally.

Thus, a crosslinkable group can have any structure capable of cross-linking, however, there is not guidance in this definition of where the structural aspects of X begin or end.

Non-limiting "examples" of crosslinkable X groups are (page 4 and 5 of the specification):

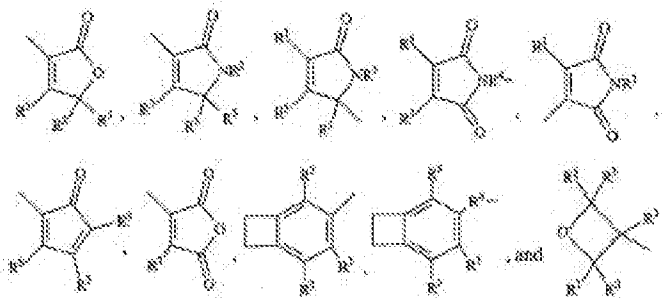
35 Examples of crosslinkable X groups are moieties containing a double bond, a triple bond, a precursor capable of in situ formation of a double bond, or a heterocyclic addition polymerizable group. Preferred crosslinkable X groups include benzocyclobutanyl groups and substituted C₆₋₁₁ arylene groups containing one or more substituents selected from the group

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consisting of benzoylacetone, azide, oxirane, di(hydroxyalkyl)amino, cyanate ester, hydroxy, glycidyl ether, C_{1-10} alkylacrylate, C_{1-10} alkylmethacrylate, allyl, ethenyl, perfluoromethenyl, silyl, malonide, malonide, tri(C_{1-4})-alkylsiloxy, tri(C_{1-4})alkylsilyl, and halogenated derivatives thereof. Most preferred crosslinkable X groups are 1-benzo-3,6-cyclohexene and 4-phenyl-1-(thien-2,4-cyclohexadienyl).

Specific examples of suitable crosslinkable X groups include:

$-(R^1)_p-CR^2-CR^3-$, $-(R^1)_p-C=CR^2$, $-(R^1)_p-O(R^1)_p-CR^2-CR^3-$, $-(R^1)_p-O(R^1)_p-C=CR^2$,
 $-(R^1)_p-CD(R^4)_p-CR^2-CR^3-$, $-(R^1)_p-CD(R^4)_p-C=CR^2$, $-(R^1)_p-OC(R^4)_p-CR^2-CR^3-$,
 $-(R^1)_p-OC(R^4)_p-C=CR^2$, $-(R^1)_p-OC(R^4)_p-CR^2-CR^3-$, $-(R^1)_p-OC(R^4)_p-C=CR^2$,
 $-(R^1)_p-O(CO)C(R^4)_p-CR^2-CR^3-$, $-(R^1)_p-O(CO)C(R^4)_p-C=CR^2$, NR^2 .



where

R^1 is hydrogen, halogen, C_{1-10} hydrocarbyl, C_{1-10} haloalkyl, or C_{1-10} haloalkenyl;

R^2 is C_{1-10} hydrocarbylene, C_{1-10} haloalkenylene, or C_{1-10} haloalkylene; and

p is 0 or 1.

Thus, crosslinkable groups can at least be "a precursor capable of in situ formation of a double bond", heterocycles, or addition polymerizable groups. Further, it cannot be said that all members of the Markush group have a single structural similarity. For example, the group includes both heterocycles, and "a precursor capable of in situ formation of a double bond". These compounds, along with the numerous others encompassed by the claims, do not share a single structural similarity with respect to the functional groups present. Finally, a person of ordinary skill in the art would not be able to envisage all of the compounds encompassed by the group (which includes, for example, every single compound having a nitrogen-containing heterocyclic ring) without additional guidance as to what other structural features are required by the compound. As such, the metes and bounds of the claims cannot be properly ascertained and the claims are indefinite.

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Claim Rejections – 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

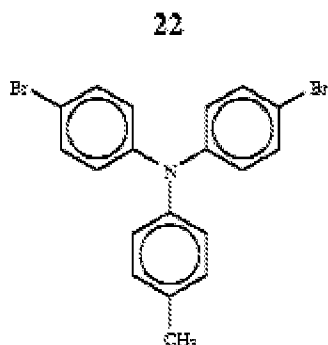
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by United States

Patent No. 5929194 ("the '194 patent").

The '194 patent teaches at least the following specie:



In this case when $n=1$, $n'=0$, $Z=\text{bromo}$, and $X=\text{a toluenyl group}$. In this case a toluenyl group is “capable” of forming a double bond. The compound of example 12 have boronic acid groups have $Z=\text{B(OR1)}_2$ wherein $R1 = \text{H}$.

Further, the group is “capable” of in situ formation of a double bond.

Conclusion

No claims are allowed. The elected specie would be deemed allowable if rewritten as an in an independent claim.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLINTON BROOKS whose telephone number is (571)270-7682. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DANIEL SULLIVAN can be reached on (571)272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CAB/

/Daniel M Sullivan/

Supervisory Patent Examiner, Art Unit 1621